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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Jerrold L. King and
Jerry M. Brooks

Serial No: 09/834,696

Filed: April 12, 2001

For: METHOD OF MAKING A
SEMICONDUCTOR CHIP
PACKAGE

)
) Attorney
) Docket Number: MICR135.02

)
) Group Art Unit: 2822

)
) Examiner: J. Mitchell

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April 5, 2002

Commissioner of Patents and Trademarks
Washington, DC 20231

Sir:

RESPONSE TO THE OFFICE ACTION MAILED DECEMBER 5, 2001

Please amend the Application as follows.

In The Claims

1. Cancel Claims 20-22.
2. Substitute the following amended claim for the original claim having the same number.

19.(amended once) A semiconductor chip package, comprising:
a semiconductor chip;
conductive leads electrically connected to and extending over a surface of the
chip;
encapsulating material covering at least a portion of the chip and fully
encapsulating the conductive leads; and

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late
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B1

B1 electrodes each having a first portion disposed in the encapsulating material and contacting a conductive lead and a second portion protruding from the encapsulating material.

3. Add the following new claims.

sub
ex
B2 23.(new) A semiconductor chip package, comprising:
a semiconductor chip;
conductive leads electrically connected to and extending over a surface of the chip;

encapsulating material covering at least a portion of the chip and at least a portion of the conductive leads; and

solder balls each having a first portion disposed in the encapsulating material and contacting a conductive lead and a second portion protruding from the encapsulating material.

24.(new) A semiconductor chip package, comprising:
a semiconductor chip having bond pads aligned along a surface of the chip;
insulating material on the surface of the chip, the insulating material having holes therein to enable electrical connection to the bond pads;

conductive leads attached to the insulating material, each lead electrically connected to and extending over the bond pads;

encapsulating material covering at least a portion of the chip and at least a portion of the conductive leads; and

solder balls each having a first portion disposed in the encapsulating material and contacting a conductive lead and a second portion protruding from the encapsulating material.

REMARKS

Claims 19 and 23-24 are pending. Claim 19 is amended, Claims 20-22 are canceled and new Claims 23-24 are added in this Response.

Rejection Under 35 U.S.C. § 103

Claim 19 has been amended to incorporate the limitations of Claim 21. Claim 19 now requires that the conductive leads are fully encapsulated. In rejecting Claim 21, the Examiner incorrectly asserted that Hundt (EP0 490 499 A1) discloses fully encapsulated leads as claimed. So far as is relevant to the present invention, Hundt teaches a conventional package in which external connections are made through leads fingers 16/18 that extend out from the encapsulating material. Hundt, Fig. 2. The only "leads" fully encapsulated in Hundt are the "finger leads 28, 38" that connect the back-up battery to the chip. Hundt, Fig. 2 and accompanying text at column 5, lines 37-48. The back-up battery is internal to the chip package. Hence, finger leads 28, 38 are not designed to nor do they provide an external electrical connection. These finger leads in Hundt are not the claimed conductive leads which, by definition, provide a path of an external electrical connection.

New Claims 23 and 24

New Claims 23 and 24 add solder ball, insulating material and bond pad alignment features to further distinguish the cited references.

The foregoing is believed to be a complete response to the outstanding office action.

Respectfully submitted,



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